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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

FEDERAL TRADE COMMISSION,  
Plaintiff

v.

MICROSOFT CORPORATION, et al.,  
Defendants

Case No. 23-cv-02880-JSC

**DECLARATION OF DENNIS W. CARLTON**

**JUNE 26, 2023**

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1. I am the David McDaniel Keller Professor of Economics Emeritus at the Booth School of Business of the University of Chicago. I received my A.B. in Applied Mathematics and Economics from Harvard University and my M.S. in Operations Research and Ph.D. in Economics from the Massachusetts Institute of Technology. I have served on the faculties of the Law School and the Department of Economics at the University of Chicago and the Department of Economics at the Massachusetts Institute of Technology.

2. I specialize in microeconomics and specifically in the economics of industrial organization. I am co-author of the book *Modern Industrial Organization*, a leading text in the field of industrial organization, and I also have published approximately 150 articles in academic journals and books. In addition, I serve as Co-Editor of the *Journal of Law and Economics*, a leading journal that publishes research applying economic analysis to industrial organization and legal matters; serve on the Editorial Board of *Competition Policy International*, a journal devoted to competition policy; and serve on the Advisory Board of the *Journal of Competition Law and Economics*. I have also served as an Associate Editor of the *International Journal of Industrial Organization and Regional Science and Urban Studies*, and on the Editorial Board of *Intellectual Property Fraud Reporter*. I was the 2014 Distinguished Fellow of the Industrial Organization Society.

3. In addition to my academic experience, I served as Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S. Department of Justice from October 2006 through January 2008. My responsibilities included supervising approximately 50 Ph.D. economists, helping formulate antitrust policy toward ongoing proposed mergers, analyzing general antitrust policies both horizontal and vertical, and communicating such policies to foreign and domestic agencies, as well as to practitioners. I also served as a Commissioner of the Antitrust Modernization Commission, created by Congress to evaluate U.S. antitrust laws. I have served as a consultant to the Department of Justice and Federal Trade Commission on the Horizontal Merger Guidelines, as a general consultant to the Department of Justice and Federal Trade Commission on antitrust matters, as a member of the American Bar Association Advisory Committee that advises the incoming President on antitrust policy, and as an advisor to the Bureau of the Census on the collection and interpretation of economic data. I also helped create and teach in a program sponsored by the Federal Judicial Center to train judges on antitrust matters.

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4. I also am a Senior Managing Director of Compass Lexecon, a consulting firm that specializes in the application of economics to legal and regulatory issues and for which I served as President (of Lexecon) for several years. I have provided expert testimony before various U.S. state and federal courts, the U.S. Congress, a variety of state and federal regulatory agencies and foreign tribunals.

5. My curriculum vitae, which includes a list of my testifying experience in the last four years, is attached as Appendix A to this report. Compass Lexecon bills for my time on this matter at my customary hourly rate, which is currently \$2,000 per hour. Neither my compensation nor that of Compass Lexecon is dependent on the outcome of this proceeding.

6. I have been asked by Counsel for Microsoft and Activision to analyze the FTC's claims, with a focus on the opinions of their economic expert, Prof. Robin Lee,<sup>1</sup> concerning potential adverse competitive effects and lack of procompetitive efficiencies arising from Microsoft's proposed acquisition of Activision. The FTC claims that, after Microsoft's acquisition of Activision (the "Proposed Transaction"), "Microsoft would have the ability and increased incentive to withhold or degrade Activision's content in ways that substantially lessen competition—including competition on product quality, price, and innovation. This loss of competition would likely result in significant harm to consumers in multiple markets at a pivotal time for the industry."<sup>2</sup> Prof. Lee opines that Microsoft would, post-merger, have the ability and a greater incentive than Activision to withhold Activision content from Microsoft console rivals, and that Microsoft would likely engage in total foreclosure. This conclusion is based primarily on a model of console demand and a separate model of the profitability of Microsoft foreclosing Activision content from Sony consoles. He also claims that because he finds that total foreclosure is profitable, even if there were no total foreclosure, Microsoft would likely engage in partial foreclosure of Activision content by in some way degrading the quality of Activision content on PlayStation consoles as compared to Xbox consoles. Finally, he claims that the

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<sup>1</sup> Expert Report of Robin S. Lee, Ph.D., May 5, 2023 ("Lee Report"); Expert Reply Report of Robin S. Lee, Ph.D., June 9, 2023 ("Lee Reply Report"); and Direct Testimony of Robin S. Lee, Ph.D. June 25, 2023 ("Lee Direct Testimony"). I understand there is a dispute about whether Dr. Lee's reports are admissible. I take no position on that matter but occasionally address points raised in his report to the extent they are admitted.

<sup>2</sup> Complaint, *In the Matter of Microsoft Corp. and Activision Blizzard, Inc.*, Docket No. 9412, December 8, 2022, ¶ 1.

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merger would be unlikely to yield efficiencies that are cognizable and sufficient to offset the harms. Thus, Prof. Lee concludes that competition and consumers would be harmed in each of the relevant markets he defines.

7. I submitted an expert report on these issues in the Federal Trade Commission's administrative court proceeding challenging the Microsoft-Activision merger.<sup>3</sup>

8. My main conclusions are as follows:

- Prof. Lee's opinion that the proposed merger will lead to competitive harm is peculiar given the competitive conditions in the industry. Sony and Microsoft are the only two firms in the narrow market Prof. Lee defines, the market for "high-performance video game consoles" sold in the U.S., and Sony is the larger console seller by far.<sup>4</sup> Microsoft expects that the proposed transaction with Activision will allow it to achieve merger-specific efficiencies that will enable it to compete better against its larger rival, Sony. Normally, this would be seen as a procompetitive outcome, but in Prof. Lee's opinion, the proposed transaction is anticompetitive because he concludes that there are no merger-specific efficiencies, or, if the efficiencies are merger specific, they are not sufficient to offset the harms from the foreclosure that his analysis predicts will occur. Moreover, Prof. Lee's conclusion that Microsoft would foreclose *Call of Duty* from Sony is especially peculiar since Sony could avoid this outcome by signing the contract that Microsoft has offered that guarantees Sony access to *Call of Duty* on its current and future consoles.
- Vertical mergers raise different issues than horizontal mergers. A horizontal merger eliminates competition among firms that produce substitutes. This automatically generates upward pricing pressure as competition is reduced. In contrast, a vertical merger, such as this one, involves combining complements, not substitutes, and does not reduce the number of competing firms. Vertical mergers automatically generate downward pricing pressure, and are typically procompetitive as a result. This does not

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<sup>3</sup> Expert Report of Dennis W. Carlton, May 23, 2023 ("Carlton Report").

<sup>4</sup> For the purposes of my report, I use Prof. Lee's market definitions, though I do not necessarily agree with them. I understand that another expert is addressing Prof. Lee's market definitions and whether they are valid.

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mean that vertical mergers are always desirable. In some limited cases, vertical mergers can generate incentives to raise rivals' costs or otherwise harm rivals, and competition can suffer. Vertical mergers, like horizontal mergers, can also generate other benefits by, for example, allowing the production of or expansion of new products such as Game Pass. Any possibility of harms from a vertical merger must be balanced against the possible benefits of a vertical merger. In the proposed Microsoft-Activision merger, there is a demonstrable benefit from the merger: *Call of Duty* will be made available on some platforms it is not currently available on (specifically, Nintendo and five cloud streaming providers, including Nvidia) and will be more widely available on Xbox through its inclusion in Game Pass. Prof. Lee does not acknowledge this benefit, or any benefit from the combining of complementary products.

- Prof. Lee presents quantitative models to support his claim that Microsoft would foreclose Sony completely from *Call of Duty*. Prof. Lee's conclusion that foreclosure would occur is incorrect and his models contain material errors.
  - Prof. Lee first generates a demand model, or as he calls it a share model, from data regarding the previous generation of consoles. This demand model allows him to estimate how consumers would substitute away from PlayStation to Xbox and other goods in the event *Call of Duty* were withheld from PlayStation. In his discussion of the model, he focuses only on substitution between PlayStation and Xbox, and he ignores the substitution to outside goods. This error, combined with other errors that undermine the reliability of his model, greatly increases the predicted increase in Xbox sales from the hypothetical foreclosure.
  - Prof. Lee's claims of total foreclosure are not supported by his separate foreclosure model. A key assumption in his foreclosure model—that 20% of single-homing<sup>5</sup> PlayStation users who play *Call of Duty* would buy an Xbox if

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<sup>5</sup> This includes a small percentage of PlayStation users who multihome with PC but would choose not to play COD on PC, whom Prof. Lee treats as single-homers. Prof. Lee collectively refers to these users as “potential Xbox purchasers.”

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*Call of Duty* were withheld from PlayStation, known as the “Xbox conversion rate”—is not supported by his demand model or by other evidence he cites. Correcting this one problem in his foreclosure model reverses his conclusion that foreclosure would be profitable to Microsoft.

- Prof. Lee makes other questionable assumptions in his foreclosure model—such as his failure to adequately account for multihoming (namely new Xbox users retaining their PlayStation and shifting only some of their purchases to Xbox), his failure to properly account for lost profits from other Microsoft and Activision titles on PlayStation, and his overestimate of the value of new to Xbox users—that lead him to further overestimate the profitability of foreclosure.
- Prof. Lee’s claims of total foreclosure are inconsistent with economic realities of the industry. Multiplayer games, like *Call of Duty* in particular, benefit from network effects, which means that as more users play them, the value of the game increases to everyone. This increases the incentive to distribute such a game widely, on many platforms, and would raise the costs of making a game exclusive. Prof. Lee provides no plausible basis for discounting these effects with a game like *Call of Duty*. Aligned with the theory that multiplayer games benefit from wide distribution, I understand that no established multi-player, multi-platform games with cross-play (which allows players on different platforms to play with one another) have been taken exclusive. In addition, Microsoft has signed contracts with Nintendo and cloud gaming providers and made an offer to Sony to make *Call of Duty* available on PlayStation. Prof. Lee’s analysis ignores that firms he claims will be totally foreclosed either have protected themselves against foreclosure or, in the case of Sony, could protect itself based on the offer made by Microsoft.
- Prof. Lee presents no quantitative model of partial foreclosure to support his claim that partial foreclosure will occur. He claims simply that it follows from his model of total foreclosure, but as his vertical foreclosure model is flawed and fails to prove that

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Microsoft would engage in total foreclosure, it equally cannot be used to assume partial foreclosure will take place. Prof. Lee also, offers no economic evidence of the magnitude of the conversion rate from partial foreclosure. Without such evidence Prof. Lee has no basis to conclude that partial foreclosure, which he envisions as a degradation of *Call of Duty* quality when played on a non-Xbox platform, would lead to sufficient gain in Xbox sales to offset the costs of such a strategy.

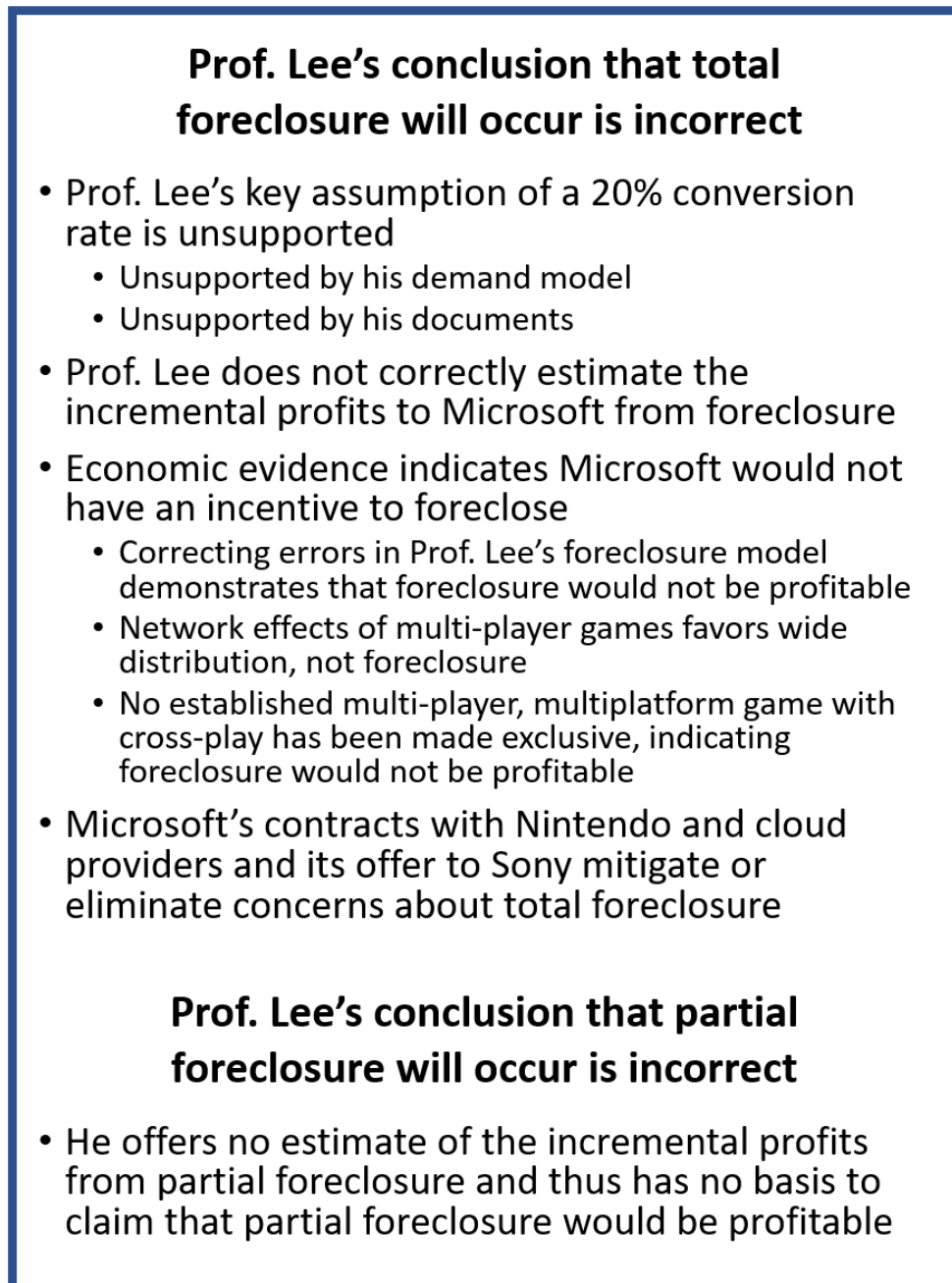
Indeed, to evaluate any partial foreclosure strategy, Prof. Lee would need to (i) specify the particular partial foreclosure strategy; (ii) assess the cost to Xbox to implement that strategy and the expected gain as a result; and (iii) evaluate the effect of that strategy on PlayStation and competition more generally. Prof. Lee has not done even the first step.

- Prof. Lee offers no quantitative model of foreclosure (total or partial) in the markets he defines regarding subscription or cloud services. The only analysis of foreclosure that he does offer focuses solely on the market for buy-to-play games in the console market. He therefore has no empirical analysis to support his claim that Microsoft would have the incentive to foreclose competitors in these other markets.
- Prof. Lee presents no quantitative model that weighs the harms he claims will occur against the benefits of vertical merger. Instead, he claims no such benefits exist, and so there are no benefits to balance against. This ignores well-accepted economic principles, which Prof. Lee acknowledges elsewhere, establishing that vertical mergers can generate benefits. Prof. Lee's claim that *Call of Duty* would have been offered on Game Pass and on cloud services in the absence of the merger is directly contradicted by Activision's past business strategy and statements about future strategy without the merger.
- Even though there will not be exclusivity for *Call of Duty*, that does not mean that it is appropriate to condemn all exclusivity in this industry. Sony and Nintendo—to a greater extent than Microsoft—use exclusivity to promote sales of their consoles. Exclusivity can, under certain circumstances, be procompetitive by creating greater incentives to create and promote a product.

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- Prof. Lee fails to adequately analyze Sony's competitive response to any potential withholding of *Call of Duty*, which further calls his analysis into question.
9. Prof. Lee's analysis of foreclosure and my critiques of it are detailed and sometimes complicated. But the essence of my critique can be stated simply, as shown in Figure 1.

**Figure 1: Prof. Lee's Foreclosure Conclusion Is Incorrect**





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**I. VERTICAL MERGERS GENERATE BENEFITS.**

10. The proposed Microsoft-Activision merger is a vertical merger, not a horizontal one. A horizontal merger eliminates a rival and creates upward pricing pressure due to the loss of that rival. In contrast, a vertical merger does not eliminate a rival and creates downward pricing pressure, which as a general matter benefits consumers. Both types of mergers can have additional benefits and harms.

11. A vertical merger combines firms with complementary assets, does not involve the elimination of a competitor to either the upstream or downstream merging firm, and generates well-recognized, procompetitive effects that must be considered in any attempt to determine the net effect of the merger on competition and consumer welfare.<sup>6</sup> These vertical merger benefits arise from the alignment of investment incentives or business strategies of the merging firms, the internalization of pricing externalities, and the reduction of transaction costs between the merging firms.

12. In limited circumstances a vertical merger can harm competition, but a complete analysis would need to show that the harms exceed the benefits. In analyzing the effect of a vertical merger on competition, the analyst must account for the procompetitive effects as well as any incentives to harm rivals in order to figure out the net effect of any vertical transaction. If the analyst ignores the benefits, he can only find harms. Without a demonstration that harms of a vertical merger exceed the benefits, one risks preventing procompetitive mergers that would enhance efficiency and improve consumer welfare.

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<sup>6</sup> The procompetitive effects of a vertical merger are well recognized, including in Prof. Lee's own academic publications. See, e.g., Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization*, Pearson, 2005, Chapter 12; Dennis W. Carlton (2020), "Transaction Costs and Competition Policy," *International Journal of Industrial Organization*, 73:1-14; Dennis W. Carlton, Georgi V. Giezov, Mark A. Israel, and Allan L. Shampine (2022), "A Retrospective Analysis of the AT&T/Time Warner Merger," *Journal of Law and Economics*, 65(S2); Gregory S. Crawford, Robin S. Lee, Michael D. Whinston, and Ali Yurukoglu (2018), "The Welfare Effects of Vertical Integration in Multichannel Television Markets," *Econometrica*, 86(3): 891-954; Ronald H. Coase (1937), "The Nature of the Firm," *Econometrica*, 4(16): 386-405; Oliver E. Williamson (1971), "The vertical integration of production: market failure considerations," *American Economic Review*, 61(2): 112-123; Bengt Holmström and John Roberts (1998), "The boundaries of the firm revisited," *Journal of Economic Perspectives*, 12(4):73-94.

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13. One of the benefits from this transaction is that Microsoft will expand the distribution of *Call of Duty* by putting it on Game Pass and making it available to cloud gaming services. Prof. Lee claims that any benefits from this transaction are not merger-specific. In particular he claims that placing *Call of Duty* on Game Pass and cloud services would have occurred in the absence of the merger and so cannot be counted as merger-specific benefits. This view is contrary to Activision's business strategy and the available evidence.

14. Microsoft has also signed an agreement to develop *Call of Duty* for Nintendo. Because *Call of Duty* is not offered on the Nintendo Switch today and no *Call of Duty* titles have been released on a Nintendo console since 2013, this represents an expansion of access to *Call of Duty*. The Microsoft-Nintendo agreement commits Microsoft to developing the game for Nintendo consoles, something Activision had been unwilling to do. That means that this agreement creates a merger-specific benefit.

15. **Content Library Subscription Services.** Activision's strategy is not to make its current content available on content library subscription services for a variety of reasons including that, as a game developer, Activision believes participating in content library subscription services would erode its business model, including by resulting in substantial cannibalization of its single game sales of *Call of Duty*.<sup>7</sup> Microsoft has tried, and failed, to persuade Activision to put its content onto Game Pass.<sup>8</sup> And Play Station's CEO, Jim Ryan, testified that Sony did not even

<sup>7</sup> Zerza IH Tr., p. 330:3-6 ("So, we generally have no interest in putting our titles into Game Pass at the new launch because it would highly cannibalize our full game business . . ."); Schnakenberg IH Tr., pp. 315:22-316:11 ("A. As we discussed, we've done Game Pass analysis over many years in discussions, and we previously discussed the strategic concerns we've had. Bobby has been supportive of our decisions and -- of not to participate in Game Pass and particularly vocal about, I believe, the first bullet we talked about on a previous document that talked about how it, you know, further distances us from a direct relationship with the consumers. So, you know, Bobby's opinions on Game Pass participation have aligned with the analysis and results and decisions we have made pretty consistently through all of our analysis."). This is also understood by Sony. See, e.g., Ryan 4/6/23 Depo. Tr., p. 258:20-25 ("Q You have no reason to believe that Mr. Kotick and Activision would put Call of Duty on a subscription service like Game Pass for any length of time or day and date if this transaction is not completed, right? A Correct.")

<sup>8</sup>



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broaden the idea of putting new *Call of Duty* titles on PlayStation Plus because he did not think Mr. Kotick would consider doing so.<sup>9</sup>

16. Given Activision's consistent business strategy and its view of the economics of putting its content into content library subscription services, the only reasonable assumption about Activision's behavior in the absence of the merger is that it would continue to withhold its current content from content library subscription providers. By contrast, the evidence shows that Microsoft will put *Call of Duty* into Game Pass after the acquisition, which will make the game available to more consumers.<sup>10</sup>

17. **Cloud Providers.** Activision's consistent business strategy and analysis has been that cloud gaming services do not facilitate a high-quality user experience for games like *Call of Duty*, and that it would not be worthwhile to invest its limited resources in developing games for cloud services that would have only speculative potential.<sup>11</sup> Activision does not make its games commercially available on any cloud gaming service provider,<sup>12</sup> and Mr. Kotick has explained that he and other Activision executives will not put Activision content on cloud services.<sup>13</sup> Prof. Lee offers no analysis demonstrating that it would be in Activision's future economic interests to change its long-standing business strategy and offer new *Call of Duty* titles on cloud services.

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<sup>9</sup> Ryan 4/6/23 Depo. Tr., p. 267:18-25.

<sup>10</sup> Microsoft has a policy of putting all of its first-party games on Xbox Game Pass on the game's launch date. "[A]ll new games published by Microsoft Studios, including Xbox exclusive games, are made available in Game Pass on the same day and date as they are released to purchase. This is a commitment Microsoft made in January 2018 to expand its Game Pass offering and allows subscribers to play new releases of first-party games such as Forza, Halo, and Sea of Thieves on their day of release." (Microsoft Response to FTC Second Request, p. 132.); Xbox Wire, "Xbox Game Pass Expands to Include New Releases from Microsoft Studios," January 23, 2018, available at: <https://news.xbox.com/en-us/2018/01/23/xbox-game-pass-expands/>.

<sup>11</sup> Kotick IH Tr., pp. 151:11-14, 153. See also Kotick Depo Tr., pp. 154:7-11, 157:1-25.

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<sup>13</sup> Kotick IH Tr., pp. 151:11-14. See also Kotick Depo Tr., pp. 154:7-11, 157:1-25 ("I think it's so complicated to be able to do that that it's gonna be a decade before you'll have an acceptable experience that's streamable in a cloud to a mass market consumer.")

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18. Given Activision's consistent business strategy and its judgment that cloud gaming services do not facilitate a high-quality user experience for games like *Call of Duty*, the only reasonable assumption about Activision's behavior in the absence of the merger is that it would continue to withhold its *Call of Duty* content from cloud gaming services. By contrast, Microsoft's contractual commitments to cloud gaming services providers would make Activision's content more broadly available to consumers than it would be in the absence of the proposed merger.

19. As in the case of subscription, Prof. Lee suggests that Activision would have a greater incentive than the merged entity to distribute *Call of Duty* to cloud gaming Microsoft rivals. The contracts signed by Microsoft prove this to be false.

20. **Investment incentives.** The combined company will have an increased incentive to invest in developing new games or franchises or improving existing games or franchises compared to an independent Activision. This is because the combined company will capture more of the incremental profits from these investments than Activision does as an independent game developer. Moreover, because adding *Call of Duty* to Game Pass will result in an increase in the number of Game Pass users, that gives Microsoft more incentive to invest in other games, not just Activision games. This alignment of incentives between Microsoft and Activision has not been and likely cannot be achieved by contract. In the presence of contracting costs, uncertainty, and asymmetric information, contracts cannot necessarily produce the equivalent of what an integrated firm can achieve.<sup>14</sup> Thus, the merger can be expected to increase incentives to invest in game development compared to a world without the merger.

21. In summary, this vertical merger creates benefits that cannot be ignored when assessing whether it is procompetitive or anticompetitive. Microsoft plans to make *Call of Duty* available on Game Pass (including on Game Pass Ultimate, which involves a cloud streaming feature) and has already signed contracts with Nintendo and cloud providers, both of which will make *Call of Duty* more broadly available than it would be in the absence of the merger. The merger will also improve incentives to invest in game development. Prof. Lee's analysis ignores this reality and

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<sup>14</sup> Ronald H. Coase (1937), "The Nature of the Firm," *Econometrica*, 4(16): 386-405; Oliver E. Williamson (1971), "The vertical integration of production: market failure considerations," *American Economic Review*, 61(2): 112-123; Bengt Holmström and John Roberts (1998), "The boundaries of the firm revisited," *Journal of Economic Perspectives*, 12(4):73-94.

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concludes that the Proposed Transaction would likely harm competition and consumers in each relevant market. Assessing only the potential harms of a merger without properly considering the benefits can lead to the denial of mergers that are procompetitive and benefit consumers. This problem is particularly acute for vertical mergers, which, as Prof. Lee has acknowledged in his academic work,<sup>15</sup> necessarily create efficiencies.

## II. PROF. LEE'S CONCLUSION THAT TOTAL FORECLOSURE WOULD OCCUR IS INCORRECT

22. The only quantitative analysis Prof. Lee relies on to demonstrate that total foreclosure is likely to occur is a model of total foreclosure of certain Activision content from PlayStation consoles. He offers a separate model of demand, which he calls the share model, to demonstrate that exclusive content is valuable to a console manufacturer, and he appears to use the results of that model to validate a key assumption he makes in his foreclosure model. Specifically, he assumes that 20% of single-homing PlayStation users who would have purchased *Call of Duty 2025* absent withholding will purchase an Xbox in the event that *Call of Duty 2025* is withheld from PlayStation (the "Xbox conversion rate"), resulting in a 5.5% share shift to Xbox. Prof. Lee provides no reliable support for this assumption, however, and his foreclosure model does not provide reliable support for his conclusions that totally withholding *Call of Duty* from PlayStation likely would be profitable and likely would occur.<sup>16</sup>

23. Even before describing the errors in Prof. Lee's analysis, it is useful to recognize there is no evidence that Microsoft contemplates doing what Prof. Lee claims is likely to occur—foreclosure of *Call of Duty* from Sony's PlayStation—nor does the evidence from prior experience support his claim. Microsoft's internal analysis of the financial implications of the

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<sup>15</sup> Gregory S. Crawford, Robin S. Lee, Michael D. Whinston, and Ali Yurukoglu (2018), "The Welfare Effects of Vertical Integration in Multichannel Television Markets," *Econometrica*, 86(3): 891-954.

<sup>16</sup> I note that my conclusion of no foreclosure is consistent with the findings of the UK Competition & Markets Authority and the European Commission, both of which concluded that Microsoft would not have an incentive to withhold Activision content from PlayStation. CMA, Anticipated acquisition by Microsoft of Activision Blizzard, Inc. - Final report", April 26, 2023, available at: [https://assets.publishing.service.gov.uk/media/644939aa529eda000c3b0525/Microsoft\\_Activision\\_Final\\_Report\\_.pdf](https://assets.publishing.service.gov.uk/media/644939aa529eda000c3b0525/Microsoft_Activision_Final_Report_.pdf), ¶¶ 55-56; European Commission press release, "Mergers: Commission clears acquisition of Activision Blizzard by Microsoft, subject to conditions," May 15, 2023, available at: [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_23\\_2705](https://ec.europa.eu/commission/presscorner/detail/en/ip_23_2705).



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merger does not postulate any foreclosure.<sup>17</sup> Indeed, Microsoft has offered Sony a contract to prevent foreclosure of *Call of Duty* (though Sony has refused it). The trial testimony also supports the view that Microsoft will not withhold *Call of Duty* from Sony.<sup>18</sup> There is no evidence that Prof. Lee cites, and I am aware of none, that shows that any established multiplayer, multi-platform game with cross-play, i.e., any game that shares these characteristics of *Call of Duty*, has ever been made exclusive. Microsoft has not made exclusive any established multiplayer, multi-platform game with cross-play. For example, it did not make Minecraft exclusive after it purchased it.

24. **Prof. Lee's demand model does not provide a reliable basis for his conversion rate assumption.** Prof. Lee's demand model is important to his foreclosure conclusion because he relies on the demand model, in part, to justify his 20% Xbox conversion rate, which implies a share shift of 5.5%. Prof. Lee states that this share shift assumption is conservative compared to the 8.9% share shift from exclusivity estimated by his demand model. But his demand model contains errors that, when corrected, produce results that do not support his key assumption about the conversion rate.

25. His demand model, which is based on U.S. data from the previous console generation, makes several assumptions, two of which are critical in producing the final output and that are inconsistent with other parts of his model.<sup>19</sup> Because of those inconsistencies, I label these assumptions "errors." Notably, Prof. Lee includes only data about the PlayStation 4 and Xbox One, even though his data includes information on the Nintendo Switch.

26. ***First***, Prof. Lee assumes that the presence of non-exclusive games on the Xbox One and the PlayStation 4 (i.e., games available on both consoles, such as *Call of Duty*) do not influence

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<sup>17</sup> The financial model that Microsoft used to analyze the proposed transaction (the "Deal Model"). PX1217-MSFT-2R-08912251.

<sup>18</sup> Trial testimony of Phil Spencer, in this matter, June 23, 2023, pp. 367-368.

<sup>19</sup> Prof. Lee estimates a model of consumer demand in which he uses data from 2013-2020 to predict how the relative share of Xbox One and Sony PlayStation 4 consoles sold during that period of time would have changed if *Call of Duty* and other Activision games had been made exclusive to the Xbox One. Using the specification in his initial report, Prof. Lee's demand model predicts that Xbox One's market share in the U.S. would have increased by 8.9% relative to PlayStation 4's market share. This leads Prof. Lee to conclude that "Microsoft could achieve a substantial increase in Xbox console sales by making Activision content exclusive to its consoles."

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consumer choice between the consoles and can be ignored in predicting the consoles' relative shares. I refer to this as the Non-Exclusive Games Error.

27. Prof. Lee made the Non-Exclusive Games Error when calculating his market share shift estimate despite the fact that (i) his own model was designed to take into account the fact that non-exclusive games can have different expected utility on each console;<sup>20</sup> and (ii) his model generated results showing that these games have different utilities across platforms.<sup>21</sup> Thus, despite developing a model that allows non-exclusive games to have different values on different consoles—and his apparent adoption of that idea in his academic work,<sup>22</sup> Prof. Lee assumes, when estimating his demand model in his initial report, that the valuation of any non-exclusive game is identical across consoles. This constraint that Prof. Lee placed on his model eliminates non-exclusive games from the analysis. Put simply, he ignores the presence of non-exclusive games in influencing console choice, despite his model specification and earlier academic research indicating non-exclusive games matter.

28. I used Prof. Lee's own model and data to show that the shares of non-exclusive games, and specifically *Call of Duty*, are not the same (as Prof. Lee assumes), but rather are different across consoles. For example, the share of consumers who purchased *Call of Duty: Ghosts* can vary from console to console and can show differences as large as nine percentage points, as was the case in December 2013 when its share was [REDACTED] on Xbox, compared to [REDACTED] on PlayStation 4. According to Prof. Lee's model, this implies that the utility a consumer derived from this game on the Xbox One differed from the utility a consumer derived from the game on PlayStation 4, undermining Prof. Lee's assumption that the utility that consumers received from this game in December 2013 is identical on both consoles.

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<sup>20</sup> Lee Report, ¶ 730.

<sup>21</sup> Prof. Lee's backup includes the program "05 Compute software utility.do", which generates the intermediate dataset "05 Software utilities 2.dta". This file contains the utilities for the non-exclusive software that Prof. Lee omitted from his model. It shows that the utilities for the same software in the same month differs across consoles.

<sup>22</sup> In his 2013 paper estimating a model of consumer demand for gaming consoles and software, Prof. Lee does not appear to impose the assumption that non-exclusive games have identical value on different consoles. (Robin S. Lee, (2013), "Vertical Integration and Exclusivity in Platform and Two-Sided Markets," *American Economic Review*, 103(7): 2960-3000.)

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29. Prof. Lee then generated a new version of his model that includes variables to separately measure the utility of both exclusive and non-exclusive games. But estimating this more general demand model without any constraints results in a negative coefficient for the utility of non-exclusive games. This is a nonsensical result because it suggests that as non-exclusive games are added to a platform, the platform's utility to consumers decreases. Prof. Lee acknowledges that such a result would not be "economically sensible."<sup>23</sup> To "fix" this problem, Prof. Lee simply constrains the coefficient on the utility of non-exclusive games in his model to be non-negative, which in effect sets them equal to 0. It is not surprising that Prof. Lee finds that the results of this new model are similar to those of his original demand model—in fact, they are identical. This is because the constraint he imposes on the coefficients on software utility (setting them to zero), in effect, turns his new model into his old model (which did not include non-exclusive games at all).

30. Prof. Lee's approach is not sound as a matter of economics. If a model generates what Prof. Lee admits are nonsensical results, that is a sign the model is unreliable. In such an instance, the solution is not to constrain the model to force a more sensible outcome, but to reformulate the model such that the unconstrained model gives a sensible result. This is especially true when, as here, the constraint simply replicates the original flawed model.

31. **Second**, Prof. Lee assumes that every lost PlayStation 4 sale results in an additional Xbox One sale, ignoring the fact that consumers may choose to purchase something other than the Xbox One in the event of foreclosure (i.e., they may choose the "outside good," such as Nintendo, PC, or simply not playing games at all, in Prof. Lee's demand model).<sup>24</sup> This assumption is particularly problematic because Activision content could be played on platforms other than PlayStation and Xbox post transaction and thus PlayStation users who want to access *Call of Duty* after foreclosure have options other than purchasing an Xbox. I refer to this as the Outside Good Error.

32. Prof. Lee's predicted change in Xbox One sales from his demand model depends critically on the assumption that, if *Call of Duty* were withheld from PlayStation 4, every

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<sup>23</sup> Lee Reply Report, note 192.

<sup>24</sup> Lee Reply Report, ¶ 156.



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consumer who would leave the PlayStation 4 would go only to the Xbox One. This assumption is flawed, however, and causes Prof. Lee to greatly overstate the predicted change in the sales of Xbox One. It is the change in Xbox sales, not the change in Xbox's share of Xbox plus PlayStation sales, that matters to an analysis of foreclosure.<sup>25</sup>

33. Similar to the Non-Exclusive Games Error, Prof. Lee's assumption regarding the outside good is inconsistent with his demand model that explicitly allows consumers to choose the outside good. As initially described, Prof. Lee's model contemplates that if *Call of Duty* were removed from PlayStation, consumers who would have chosen to purchase a PlayStation had *Call of Duty* been available on the platform have three choices: (1) they can still choose to purchase a PlayStation, despite the absence of *Call of Duty*; (2) they can purchase an Xbox; or (3) they can do something else—multihomed or purchase a different console (such as Nintendo), a gaming PC, or nothing at all. This third option of substituting to the "outside good" is critical for correctly answering the question of whether it would be profitable for Microsoft to withhold *Call of Duty* from Sony. But Prof. Lee fails to account for it in his demand model, even though his own academic research on consumer demand for consoles shows that diversion to the outside good is significant.<sup>26</sup>

34. Prof. Lee's assumption that no consumers would switch to the outside good leads his demand model to overstate the predicted increase in Xbox One sales if *Call of Duty* is withheld from the PlayStation 4. To see why this is the case, consider the extreme example where diversion to the outside good is 100%, that is, every consumer who chooses not to purchase a PlayStation 4 due to *Call of Duty* being unavailable chooses not to purchase an Xbox One.

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<sup>25</sup> For example, suppose that there are 9 consumers who purchase Xbox, 9 who purchase PlayStation, and 82 who purchase the outside option. Xbox's sales as a percentage share of the sales of Xbox+PlayStation is 50% ( $=9/(9+9)$ ). Suppose that as a result of foreclosure of PlayStation, 3 out of the 9 PlayStation consumers leave PlayStation and go to the outside option. Xbox's sales do not increase at all in this scenario, but Xbox's percentage share of Xbox+PlayStation sales will increase to 60% ( $=9/(9+6)$ ). Because his methodology ignores the outside good, Prof. Lee would find an increase in Xbox sales in this scenario, even though there is none. He would calculate the change in Xbox sales as the change in Xbox's percentage share of Xbox+PlayStation times the number of Xbox+PlayStation sales prior to foreclosure, i.e.,  $(60\% - 50\%) \times 18 = 1.8$ .

<sup>26</sup> See Robin S. Lee, (2013), "Vertical Integration and Exclusivity in Platform and Two-Sided Markets," *American Economic Review*, 103(7): p. 2986 ("Most consumers opt to consume the outside good rather than purchase another console following a price increase.")

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Clearly, in this scenario, one should predict no increase in the number of Xbox Ones sold. Because Prof. Lee looks only at the change in relative share of the Xbox One and PlayStation 4 (ignoring the outside good), however, he would falsely predict an increase in the number of Xbox Ones sold. The manner in which Prof. Lee estimates his model precludes him from ruling out this possibility and instead imposes an equally extreme assumption on the other end of the spectrum: that diversion to the outside good is 0%.

35. Correcting Prof. Lee's error in excluding non-exclusive software from his demand model and his error in not accounting for diversion to the outside good leads to a substantially lower predicted effect on Xbox sales in the event Microsoft were to withhold *Call of Duty* from PlayStation. After these corrections, Prof. Lee's own model would show an estimated increase in Xbox One sales that is between [REDACTED] of what Prof. Lee's demand model predicts.

36. Alternative specifications of Prof. Lee's model predict even smaller effects on Xbox sales. I estimated a model that is identical to Prof. Lee's demand model, except that it corrects the two errors described above and is more general—specifically, I allowed for the possibility that the relationship between the software on a console and the share of console sales vary seasonally. I find that this model fits the data better than does Prof. Lee's according to the very criterion that Prof. Lee uses to choose among the multiple versions of his model that he estimates.<sup>27</sup> This model shows an estimated increase in Xbox One sales that is between [REDACTED] of what Prof. Lee's demand model predicts.

37. Prof. Lee's testimony cites to his demand model as evidence that his foreclosure model, with his assumed 20% Xbox conversion rate, produces conservative results. My analysis has shown that it is not conservative compared to a corrected version of his demand model and that the increase in Xbox sales from his total foreclosure model are much larger than what he would predict from his demand model, and thus there is no support from his demand model to justify his assumption in his foreclosure model.

38. **Prof. Lee's foreclosure model does not provide a reliable basis for concluding foreclosure is likely.** Prof. Lee presents a foreclosure model to estimate whether it would be

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<sup>27</sup> Prof. Lee uses the mean squared error to select his baseline model over his alternative specifications. Lee Report, note 938.

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profitable for Microsoft to withhold Activision content from Sony consoles. Specifically, the model compares the costs to Microsoft of withholding content—i.e., lost Activision sales on PlayStation—to the benefits to Microsoft of withholding content—i.e., incremental profits earned from gamers who would choose to play the Activision content on Xbox consoles or PCs. Prof. Lee’s primary model is one that predicts the costs and benefits of foreclosing *Call of Duty 2025*, and no other version of the game.<sup>28</sup> He makes several errors that, when corrected, demonstrate that foreclosure would not be profitable. First and foremost, Prof. Lee overestimates the share of foreclosed PlayStation gamers who would buy an Xbox to access *Call of Duty 2025*.

39. **Prof. Lee’s conversion rate assumption is unsupported by economic evidence.** One of the most important inputs into Prof. Lee’s foreclosure model is his assumption that 20% of single-homing PlayStation owners who would have purchased *Call of Duty 2025* absent withholding will purchase an Xbox in the event that *Call of Duty 2025* is withheld from PlayStation. Prof. Lee calculates that this 20% “Xbox conversion rate” would result in 1.6 million “new to Xbox” or “NTX” users in the first year alone if *Call of Duty 2025* were withheld from PlayStation. Prof. Lee calculates that this is equivalent to a share shift to Xbox of 5.5 percentage points (pp) over the first year since 1.6 million is 5.5% of yearly, global Xbox Series X|S and PlayStation 5 console sales.

40. Prof. Lee provides no economically sound basis for his assumption of a 20% Xbox conversion rate or for the associated 5.5% share shift to Xbox after foreclosure.

41. Prof. Lee claims that his demand model justifies the 5.5% share shift in his foreclosure model, and that if anything, his foreclosure model may be conservative as the demand model estimates an even larger share shift.<sup>29</sup> However, as I discussed above, a corrected version of Prof. Lee’s demand model that accounts only for his failure to correctly model the value of non-exclusive games and his failure to account for sales shifting to the outside good predicts that

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<sup>28</sup> He also considers two alternative models, the first of which assesses Microsoft’s incentive to withhold four COD titles (COD 2025-2028), and the second of which assesses Microsoft’s incentive to withhold *Diablo IV*. Lee Report, ¶¶ 565-566.

<sup>29</sup> Lee Direct Testimony, ¶ 106.

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withholding *Call of Duty* from PlayStation will lead to far less switching to Xbox than he predicts.

42. Prof. Lee also claims that internal business documents from Microsoft support his conversion rate assumption or the associated share shift. I do not know how Prof. Lee chose the documents on which he relies, and I do not claim to be an expert in reading documents,<sup>30</sup> but a plain reading of the documents he offers do not support his assumption.

43. Prof. Lee relies on just one document in his direct testimony to justify his 5.5% share shift, but this document does not support a share shift that large. Specifically, Prof. Lee cites to a Microsoft document that indicates that “an exclusive AAA release accounts for ... a 1–3% shift worldwide.”<sup>31,32</sup> Prof. Lee provides no basis or economic reasoning for why a document predicting a 1-3% shift worldwide based on the release of an exclusive AAA game can justify a 5.5% share shift assumption based on the withholding of *Call of Duty*.

44. Updating Prof. Lee’s foreclosure model to incorporate an Xbox conversion rate of [REDACTED] (which generates a share shift of [REDACTED]), and changing nothing else, reduces the estimated recoupment rate to [REDACTED], which indicates that foreclosure would not be profitable. (The recoupment rate is the ratio of gained profits from withholding to lost profits from withholding.)

45. Prof. Lee has also claimed that his 20% Xbox conversion rate is “consistent with results from a survey conducted by the UK’s Competition and Markets Authority (‘CMA’),” which found that 19% of COD users “who own a PlayStation, but not an Xbox console, said they would have purchased an Xbox console if *Call of Duty* were not available on PlayStation.”<sup>33</sup> But the set

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<sup>30</sup> I leave it to the fact finder the interpretation of any ambiguity in documents.

<sup>31</sup> Lee Direct Testimony, ¶ 106. I note that Prof. Lee’s foreclosure model analyzes global sales, so only the global estimate is relevant.

<sup>32</sup> [REDACTED]

<sup>33</sup> Lee Reply Report, ¶ 210.

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of users under consideration in Prof. Lee's analysis is very different from the set of users in the CMA survey. The CMA survey is restricted to PlayStation COD users "who spent at least 10 hours or at least \$100 on Call of Duty during July 2021–June 2022." This represents just [REDACTED] of PlayStation COD users.<sup>34</sup> The PlayStation COD users represented by the CMA survey should be expected to behave differently than PlayStation COD users not represented. As stated by the CMA: "Since [REDACTED] gamers would have played CoD for a more limited time and/or spent less money on it than surveyed gamers, we now consider it appropriate to focus on an outcome in which these [low-COD usage] gamers would not switch consoles in response to a total foreclosure."<sup>35</sup> To illustrate the effect of Prof. Lee's incorrect reliance on the CMA survey, notice that if the [REDACTED] of COD users who have low-COD usage would not be willing to buy an Xbox to access COD—as assumed by the CMA—then the Xbox conversion rate across all COD users would be approximately [REDACTED],<sup>36</sup> which is less than half of the rate assumed by Prof. Lee.<sup>37</sup> Updating Prof. Lee's foreclosure model to incorporate an Xbox conversion rate of [REDACTED] (which generates a share shift of [REDACTED] and changing nothing else,

<sup>34</sup> Telemetry data indicates that, during July 2021–June 2022, [REDACTED] of PlayStation COD gamers played COD for fewer than 10 hours per year and spent less than \$100.

<sup>35</sup> CMA Addendum to Provisional Findings, ¶ 4.11 ([https://assets.publishing.service.gov.uk/media/641d6b7e32a8e0000cfa9381/Updated\\_version\\_-\\_Microsoft\\_Activision\\_Addendum\\_PFs\\_For\\_Publication\\_230324\\_.pdf](https://assets.publishing.service.gov.uk/media/641d6b7e32a8e0000cfa9381/Updated_version_-_Microsoft_Activision_Addendum_PFs_For_Publication_230324_.pdf)).

<sup>36</sup> [REDACTED]

<sup>37</sup> Furthermore, the CMA survey analyzes a different question than does Prof. Lee's foreclosure model. Prof. Lee analyzes the behavior of gamers who would buy COD 2025 on PlayStation absent foreclosure, meaning that he is analyzing the behavior of gamers who (almost) all already own a current PlayStation device. In contrast, the CMA survey asks participants about their prior console purchase decision, and hence, asks gamers to assume that they do not own their current PlayStation device. Users who already own a PlayStation (and thus can already access all third-party games) will be less likely to purchase an Xbox than users who do not already own a PlayStation (and thus cannot already access all third-party games). Consequently, Prof. Lee should assume in his foreclosure analysis that there would be fewer NTX users than is implied by the CMA survey. For related reasons, NTX users would be more likely to multihome in Prof. Lee's model than in the CMA survey.

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reduces the estimated recoupment rate to [REDACTED] which indicates that foreclosure would not be profitable.<sup>38</sup>

46. In summary, Prof. Lee provides no economically sound basis for his assumption of a 20% Xbox conversion rate. Neither his demand model nor the documents to which he cites support his assumption, and the adjustments I have described reduce the estimated recoupment rate below 100%, which indicates that foreclosure would not be profitable.<sup>39</sup> If Prof. Lee's foreclosure model were updated to address other errors that cause it to overestimate the profitability of foreclosure, then foreclosure would be even more unprofitable. Below, I describe three such errors: Prof. Lee fails to account for multihoming, Prof. Lee fails to account for lost sales on non-foreclosed Microsoft and Activision games, and Prof. Lee uses aggressive LTV assumptions to estimate the expected value of NTX users to Microsoft.

47. **Prof. Lee fails to adequately account for multihoming.** Prof. Lee fails to account for the fact that users who buy an Xbox in response to foreclosure (Prof. Lee's "NTX" users) will be especially likely to multihome with PlayStation and use PlayStation as their primary gaming console. These NTX users already own a PlayStation, prefer gaming on PlayStation over Xbox based on revealed preferences, would likely own a considerable number of games that they already purchased for their PlayStation, and/or are interested in playing PlayStation exclusive games. As such, NTX users are likely to keep a high percentage of their non-COD game spending on PlayStation instead of transferring that spending to Xbox.

48. Prof Lee fails to account for the fact that NTX users are especially likely to multihome and, conditional on multihoming, are especially likely to use PlayStation as their primary device. Prof. Lee's model therefore overestimates the value of an NTX user to Microsoft, and consequently, overestimates the value of foreclosure. If Prof. Lee's foreclosure model were updated to address this error, then foreclosure would be even more unprofitable.

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<sup>38</sup> Even if the [REDACTED] of COD users who have low-COD usage would be willing to buy an Xbox at half the rate of heavier-COD users (i.e., if low-COD usage users had an Xbox conversion rate of [REDACTED] the overall Xbox conversion rate would be [REDACTED] and Prof. Lee's foreclosure model would have a recoupment rate of [REDACTED]

<sup>39</sup> Lee Direct Testimony, ¶ 108.



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49. **Prof. Lee fails to properly account for lost sales on non-foreclosed Microsoft and Activision games.** Suppose, for example, that *Call of Duty 2025* were to be foreclosed from PlayStation and, as a result, a user purchases an Xbox to play *Call of Duty 2025* and switches to using Xbox as his primary gaming device. That user will no longer purchase future *Call of Duty* releases on PlayStation, even though he may have purchased future COD releases on PlayStation absent the foreclosure of *Call of Duty 2025*. Prof. Lee's foreclosure model ignores Microsoft/Activision's lost sales of games other than *Call of Duty 2025* on PlayStation that result from PlayStation users purchasing an Xbox after foreclosure of *Call of Duty 2025*. In contrast, Prof. Lee's benefit calculations account for all expected Microsoft/Activision profits on this user, including profits on future Microsoft/Activision releases. In other words, Prof. Lee's foreclosure model does not recognize that some of the additional sales Microsoft/Activision makes on future games following foreclosure of *Call of Duty 2025* are merely sales that are shifted from PlayStation to Xbox, and not incremental sales.<sup>40</sup> His model therefore underestimates the cost to Microsoft of withholding *Call of Duty 2025*, and consequently, overestimates the value of foreclosure. If Prof. Lee's foreclosure model were updated to address this error, then foreclosure would be even more unprofitable.

50. **Prof. Lee uses aggressive LTV assumptions to estimate the expected value of NTX users to Microsoft.** Prof. Lee asserts that NTX switchers would produce greater than average lifetime value because they are *Call of Duty* gamers, who Prof. Lee claims spend 40% more than average Xbox gamers. He therefore adjusts his baseline LTV estimate upwards by 40% (net of the console subsidy in the first year) in order to estimate the true value of an NTX user to Microsoft. But Prof. Lee has not demonstrated that the *Call of Duty* gamers who are most likely to buy an Xbox to access *Call of Duty* in the event of foreclosure spend more than average gamers.

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<sup>40</sup> Prof. Lee's alternative model that assesses Microsoft's incentive to withhold four COD titles (COD 2025-2028) partially accounts for these lost sales by modeling lost sales on only a limited number of future COD releases. (Lee Report, ¶¶ 786-787; Lee Reply Report, ¶ 246.) Even using Prof. Lee's unjustified 20% Xbox conversion rate and ignoring my other criticisms, this alternative model estimates a recoupment rate of just 100.7%. (Prof. Lee's initial report overestimated the average value of an Xbox user to Microsoft, a fact he now acknowledges. In his direct testimony, Prof. Lee therefore employs a revised, lower estimate. Prof. Lee's direct testimony does not report the updated results of his alternative four-COD foreclosure model.)

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51. Prof. Lee argues that users who spend more total hours on *Call of Duty* will be more likely to buy an Xbox in the event of foreclosure, but he fails to acknowledge that *Call of Duty* intensity (i.e., the percentage of gaming time spent playing *Call of Duty*) matters as well. For example, imagine two gamers. Gamer A plays 100 hours of *Call of Duty* and four hours of PlayStation exclusives; Gamer B plays 100 hours of *Call of Duty* and 400 hours of PlayStation exclusives. It is to be expected that Gamer A would be more likely to buy an Xbox in the event of foreclosure, or at least more likely to single-home on Xbox post-foreclosure. Prof. Lee fails to recognize that, all else equal, users with higher *Call of Duty* intensity are more likely to buy an Xbox in the event of foreclosure. This is a significant oversight because such users also tend to have lower spending than average gamers. Prof. Lee has not demonstrated which *Call of Duty* gamers are most likely to buy an Xbox, so he instead assumes that NTX users would have spending levels consistent with average *Call of Duty* gamers. In my opinion, this assumption is likely to be aggressive, which would cause Prof. Lee to overestimate the value of an NTX user to Microsoft, and consequently, overestimate the value of foreclosure. If Prof. Lee's foreclosure model were updated to use a more conservative LTV assumption, then foreclosure would be even more unprofitable.

52. **Prof. Lee's analysis does not account for the commitments Microsoft has made regarding *Call of Duty*.** Prof. Lee dismisses the existing contracts and contractual offers Microsoft has made to console manufacturers and cloud gaming services that eliminate its ability to totally foreclose *Call of Duty* from those platforms. He opines that any agreement with Microsoft could not eliminate the possibility of foreclosure since Microsoft "would have an economic incentive to deviate from" the agreements. Even assuming that is true, which I do not agree with, a firm's reputations and, if needed, court proceedings, create incentives to rely on contracts. To assume that contracts cannot effectuate transactions is an extreme assumption, especially when the contractual terms are similar to—or better than—those of contracts that already exist, as I understand is the case here.

53. Prof. Lee ignores Microsoft's offer to Sony altogether. It is peculiar to claim that Sony's consoles will be foreclosed from effective competition by Xbox withholding *Call of Duty* when Sony refuses to sign a contract that Microsoft offered to guarantee PlayStation access to *Call of Duty*—an offer that includes a ten-year term. As an economic matter, that behavior is an indication that Sony is more concerned about preventing Xbox from becoming a more potent



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competitor (or using the regulatory review process to extract even more favorable terms for the distribution of Activision content) than it is with the possible loss of access to *Call of Duty*.

54. With respect to content library and cloud gaming services, Prof. Lee’s claim that they will be foreclosed compared to the but-for world with no transaction assumes a but-for world that is contradicted by the evidence. Namely, Prof. Lee assumes that Activision would agree to allow its content, including current versions of *Call of Duty*, to become part of a third party’s content library or cloud gaming offering in the future. As such, Prof. Lee’s claim does not reflect the expressed and consistent business strategy Activision has pursued and has stated it would continue to pursue in the absence of the merger.

### III. PROF. LEE PROVIDES NO ANALYSIS OF PARTIAL FORECLOSURE

55. Prof. Lee claims that “the Proposed Transaction would likely lead to foreclosure of Activision content in the Consoles Markets, generating competitive and consumer harm arising from less content or degraded content on Sony PlayStation consoles, and leading to lower-quality or higher-priced products and reduced consumer choice.”<sup>41</sup> However, he offers no empirical analysis to support his claim that there would be “less content or degraded content on Sony PlayStation consoles” as a result of the merger.

56. Prof. Lee’s foreclosure model examines only Microsoft’s incentive to engage in total foreclosure, not partial foreclosure. The latter cannot be inferred from the former. Microsoft’s gains and losses from partial foreclosure would differ from those that result from total foreclosure. To properly assess Microsoft’s incentives to partially foreclose, Prof. Lee would need to identify the specific partial foreclosure strategy and assess the financial costs and benefits that Microsoft would expect to realize as a result of that strategy. This would require putting forward a new model that assessed those incentives—something that Prof. Lee has not done. Even if Prof. Lee’s model of total foreclosure was informative with respect to Microsoft’s incentive to engage in partial foreclosure (it is not), as I explained above, when flaws in his total foreclosure model are corrected, it shows that it would be unprofitable for Microsoft to totally

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<sup>41</sup> Lee Direct Testimony, ¶ 114.

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foreclose. He therefore cannot claim that his finding of total foreclosure justifies a conclusion of partial foreclosure.

57. Notably, Prof. Lee offers no quantitative model of foreclosure (total or partial) in subscription or cloud services. The only analysis of foreclosure that he does offer focuses solely on the market for buy-to-play games in the console market. He therefore has no empirical analysis to support his claim that Microsoft would have the incentive to foreclose competitors in these other markets.

**IV. PROF. LEE DOES NOT EVALUATE WHETHER THE TRANSACTION WOULD HARM CONSUMERS BECAUSE HE DOES NOT ACCOUNT FOR PRO-COMPETITIVE BENEFITS**

58. Despite having no empirical basis for his claim that Microsoft would engage in partial foreclosure, Prof. Lee proceeds to quantify the consumer harm that would result from partial foreclosure. Specifically, Prof. Lee estimates a “Harm model” in which he assumes “a reduction in the quality of Sony PlayStation consoles if Activision content were foreclosed.”<sup>42</sup> Absent from this model are any of the benefits that are expected to result from the acquisition. It is well established in the economic literature that vertical mergers, such as this one, can result in benefits to consumers.<sup>43</sup> As I explain above, there are benefits unique to this acquisition, such as the inclusion of Activision content in Game Pass, that will not be realized absent the merger. These efficiencies benefit consumers, either through a reduction in the price that consumers pay or an increase in the quality of the products they purchase. A meaningful analysis of the effects of this acquisition on consumer welfare must weigh both the harms and benefits. To ignore the pro-consumer effects of a transaction while giving full weight to its hypothetical harms is tantamount to assuming that the transaction will harm consumers.<sup>44</sup>

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<sup>42</sup> Lee Direct Testimony, ¶ 116.

<sup>43</sup> See literature cited in note 6, above.

<sup>44</sup> Even if Prof. Lee had established that Microsoft had the incentive to engage in partial foreclosure (he did not) and had properly weighed the harms and benefits that will result from the transaction (he did not), his Harm model would still be incapable of establishing whether the transaction would harm consumers. Much like his foreclosure model, Prof. Lee’s Harm model is dependent on a number of unsupported assumptions. Specifically, the extent to which consumers are harmed in his model depend on an assumed value of the shift in console shares, from which he infers the

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59. Prof. Lee's analysis also fails to adequately account for Sony's competitive response to Microsoft engaging in a strategy to partially or totally foreclose. In response to such a strategy, Sony could, for example, attempt to make its subscription service more appealing to consumers in order to better compete with Microsoft's Game Pass after it adds Activision content; or it could increase its investment in first-party exclusives to make its platform more desirable by gamers. These responses would not only reduce the harm to Sony from Microsoft's foreclosure strategy, but also reduce Microsoft's incentive to engage in such a strategy in the first place and provide benefit to consumers that would offset the potential harms from foreclosure. Thus, by failing to account for such competitive responses, Prof. Lee overstates Microsoft's incentive to foreclose and also overstates the harm that would result to consumers.

\* \* \*

I conclude that Prof. Lee has failed to demonstrate that this transaction will cause harm to competition or consumers, either through partial or total foreclosure of *Call of Duty* or other Activision content.



June 26, 2023

Dennis W. Carlton

Date

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extent to which the quality of the PlayStation would be reduced; and the value of the nesting parameter,  $\sigma$ , which governs the extent to which consumers substitute to the outside good, rather than the Xbox, when the quality of the PlayStation is reduced. Prof. Lee has no estimate of the value of the nesting parameter or a model that informs what share shift would occur in the event of partial foreclosure.

## **Appendix A: Curriculum Vitae and Testimony**

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**EDUCATION**

Ph.D., MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, Massachusetts: Economics, 1975.

M.S., MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, Massachusetts: Operations Research, 1974.

A.B., HARVARD UNIVERSITY (Summa cum laude): Applied Math and Economics, 1972.

**EMPLOYMENT**

COMPASS LEXECON (formerly Lexecon), (2008 – present) Senior Managing Director; LEXECON INC., (1977 – 2006), President 1997 – 2001, Senior Managing Director 2003 - 2006

UNIVERSITY OF CHICAGO, Booth School of Business, David McDaniel Keller Professor of Economics (2011 – July 2022; Emeritus July 2022- present); Katherine Dusak Miller Professor of Economics (2008 – 2011); Professor of Economics (1984 – 2008); Law School, Professor of Economics (1980 – 1984); Department of Economics, Assistant Professor (1976 – 1979); Associate Professor (1979)

U.S. DEPARTMENT OF JUSTICE, Washington, District of Columbia (2006 – 2008) Deputy Assistant Attorney General for Economic Analysis, Antitrust Division

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, Massachusetts, Department of Economics (1975 – 1976) Instructor in Economics

**OTHER PROFESSIONAL EXPERIENCE**

HARVARD UNIVERSITY, Public Policy Summer Course in Economics (1977), Professor

BELL TELEPHONE LABORATORIES (Summers 1976, 1977)

JOINT CENTER FOR URBAN STUDIES OF M.I.T. AND HARVARD UNIVERSITY, Cambridge, Massachusetts (1974 - 1975)

CHARLES RIVER ASSOCIATES, Cambridge, Massachusetts (Summers 1971, 1972) Research Assistant

## FIELDS OF SPECIALIZATION

Theoretical and Applied Microeconomics  
Industrial Organization

## ACADEMIC HONORS AND FELLOWSHIPS

Keynote Address, 32nd Annual Workshop of the Competition Law & Policy Institute of New Zealand, 2021  
2020 Award for Best Article in *Economic Inquiry* for the article "Antitrust Treatment of Nonprofits: Should Hospitals Receive Special Care? (with C. Capps and G. David)".  
Best Academic Economics Article in Antitrust - 2019 Antitrust Writing Awards, given by Concurrences and George Washington University Law School for the article "Vertical Most-Favored-Nation Restraints and Credit Card No-Surcharge Rules" (with R. Winter) in *The Journal of Law and Economics*.  
Harris Professor Lecture, Clemson University, 2019  
Taft Lecture, New York Bar Association, 2018  
Keynote Address, CRESSE Conference, June 2018  
Best Academic Economics Article in Antitrust - 2016 Antitrust Writing Awards, given by Concurrences and George Washington University Law School for the article "Rethinking Antitrust in the Presence of Transaction Costs: Coasian Implications" (with B. Keating) in *Review of Industrial Organization*.  
Keynote Address, Federal Trade Commission, Auto Distribution: Current Issues and Future Trends, January 19, 2016  
Award for Antitrust Litigation Consultants of the Year 2015, awarded by Corporate Vision  
Keynote Address, International Industrial Organization Conference, 2014  
The 2014 Distinguished Fellow, Industrial Organization Society  
Economist of the Year, Global Competition Review, 2014  
Keynote Address, Sixth Annual Federal Trade Commission Microeconomics Conference, 2013  
Heath Memorial Lecture, University of Florida, 2013  
Award (w. Mark Israel) for Best Antitrust Analysis in Litigated Cases, Global Competition Review, 2013  
Keynote Address, 21<sup>st</sup> Annual Workshop of the Competition Law & Policy Institute of New Zealand, 2010  
Keynote Address, Japanese Symposium on Competition, sponsored by Japan Fair Trade Commission, 2009  
Recipient of Inaugural Robert F. Lanzilotti Prize, awarded by the Industrial Organization Society for Best Paper in Antitrust Economics, 2008  
Keynote Address to Israel Antitrust Conference, 2008  
Lewis Bernstein Memorial Antitrust Lecture, Washington, D.C., 2006  
Distinguished Visitor, University of Melbourne, April 2005  
Milton Handler Lecture, New York, 2004  
Keynote Address to the International Competition Network, Mexico, 2004  
Alexander Brody Distinguished Lecture, Yeshiva University, 2000  
Ph.D. Thesis chosen to appear in the Garland Series of Outstanding Dissertations in Economics  
Recipient of the 1977 P.W.S. Andrews Memorial Prize Essay, best essay in the field of Industrial Organization by a scholar under the age of thirty  
National Science Foundation Grant, 1977 - 1985  
Recipient of Post-doctoral Grant from the Lincoln Foundation, 1975  
National Science Foundation Fellowship, 1972 - 1975  
Phi Beta Kappa, 1971  
John Harvard Award, 1970  
Detur Book Prize, 1969  
Edwards Whitaker Award, 1969  
M.I.T., National Scholar Award, 1968

## PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Appointed to ABA Leadership in Antitrust Section: 2018-2019  
Participant in the FTC Competition and Consumer Protection Hearings: "The State of U.S. Antitrust Law", September 21, 2018 (Session 1) and "Merger Retrospective Hearing", April 12, 2019  
Co-Organizer and Instructor, Antitrust Law and Economics Institute, Federal Judicial Center, 2017, 2018, 2023  
Member, Task Force on International Divergence in Dominance Standards, American Bar Association 2017 - 2018  
Board Member, The Taub Center for Social Policy Studies, 2017 - present  
Member, U.S. Chamber of Commerce International Competition Policy Expert Group for report on International Trade and Competition, 2017  
Appointed Member of the ABA Presidential Transition Task Force, Antitrust Law, 2016  
Appointed Member of the ABA Presidential Transition Task Force, Antitrust Law, 2012  
Advisory panel to the Department of Justice and the FTC on the merger guidelines, 2010  
Co-editor, The Journal of Law and Economics, 1980 - present  
Visiting Committee, MIT, Department of Economics, 1995 - 2011  
Member, Advisory Board, Economics Research Network, 1996 - present  
Member, Advisory Board of Antitrust and Regulation Abstracts, Social Science Research Network, 1998 - present  
Advisory Board, Massachusetts Institute of Technology, Department of Economics, 1999  
Editorial Board, Competition Policy International (CPI), 2010 - present, Co-Editor, Competition Policy International (CPI), 2004 - 2009  
Member, Economic Task Force - Antitrust Division, American Bar Association, 2010  
Advisory Board, Journal of Competition Law and Economics, 2004 - present  
Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S. Department of Justice, 2006 - 2008  
Presidential Appointment to the Antitrust Modernization Commission, 2004 - 2007  
Invited Panelist at Public Hearing on the Retail Banking Sector Inquiry: Payment Cards, before the European Commission in Brussels, Belgium, July 17, 2006.  
Consultant on Merger Guidelines to the FTC, 2003  
Professor, George Mason Institute for Judges, October 2001  
Chairman, FTC Round Table on Empirical Industrial Organization (September 11, 2001)  
Participant in the Round Table on the Economics of Mergers Between Large ILECS before the Federal Communications Commission, February 5, 1999  
Member, Steering Committee, Social Science Research Council, Program in Applied Economics, 1997 - 1999  
Participant in roundtable discussions on "The Role of Classical Market Power in Joint Venture Analysis," before the Federal Trade Commission, November 19, 1997 and March 17, 1998.  
Participant in meetings with Committee of the Federal Reserve on Payment Systems, June 5, 1997  
Associate Editor, Regional Science and Urban Economics, 1987 - 1997  
Resident Scholar, Board of Governors of the Federal Reserve System, Summer, 1995  
Accreditation Committee, Graduate School of Business, Stanford University, 1995  
Associate Editor, The International Journal of Industrial Organization, 1991 - 1995  
Editorial Board, Intellectual Property Fraud Reporter, 1990 - 1995  
Consultant on Merger Guidelines to the U.S. Department of Justice, 1991 - 1992  
Member, Advisory Committee to the Bureau of the Census, 1987 - 1990  
National Bureau of Economic Research, Research Associate  
Member, American Economic Association, Econometrics Society

## BOOKS

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## RESEARCH PAPERS

"The Equilibrium Analysis of Alternative Housing Allowance Payments," (with Joseph Ferreira) Chapter 6 of Analysis of a Direct Housing Allowance Program, The Joint Center for Urban Studies of M.I.T. and Harvard University, (July 1975).

"Theories of Vertical Integration," presented at Fourth Annual Telecommunications Conference. Appears in a volume of Proceedings of the Fourth Annual Telecommunications Conference, Office of Telecommunications Policy, (April 1976).

"Uncertainty, Production Lags, and Pricing," American Economic Review, (February 1977).

"Selecting Subsidy Strategies for Housing Allowance Programs," (with Joseph Ferreira) Journal of Urban Economics, (July 1977).

"Peak Load Pricing With Stochastic Demand," American Economic Review, (December 1977). (Reprinted in Economic Regulation edited by P.L. Joskow, Edward Elgar Publishing Limited, 1998 and Reprinted in The Economics of Public Utilities edited by Ray Rees, Professor of Economics at the University of Munich, Germany, 2005.)

"The Distribution of Permanent Income," (With R. Hall) Income Distribution and Economic Inequality, edited by Zvi Griliches, et al. (Halsted Press, 1978).

"Vertical Integration--An Overview," in Congressional Record Hearings on the Communications Act of 1978. Bill H.R. 13105, (August 3, 1978).

"Market Behavior with Demand Uncertainty and Price Inflexibility," American Economic Review, (September 1978).

"Vertical Integration in Competitive Markets Under Uncertainty," Journal of Industrial Economics, (March 1979). Awarded the P.W.S. Memorial Prize for the best essay in the field of Industrial Organization by a scholar under the age of thirty.

"Valuing Market Benefits and Costs in Related Output and Input Markets," American Economic Review, (September 1979).

"Contracts, Price Rigidity and Market Equilibrium," Journal of Political Economy, (October 1979).

"Why New Firms Locate Where They Do: An Econometric Model," in Studies in Regional Economics, edited by W. Wheaton, (Urban Institute, 1980).



- "Benefits and Costs of Airline Mergers: A Case Study," (with W. Landes and R. Posner) Bell Journal of Economics, (Spring 1980). (Reprinted in "Air Transport" in Classics In Transport Analysis series, edited by Kenneth Button and Peter Nijkamp, 2001.)
- "The Limitations of Pigouvian Taxes as a Long Run Remedy for Externalities," (with G. Loury) Quarterly Journal of Economics, (November 1980).
- "The Law and Economics of Rights in Valuable Information: A Comment," Journal of Legal Studies, (December 1980).
- "Price Discrimination: Vertical Integration and Divestiture in Natural Resources Markets," (with J. Perloff) Resources and Energy, (March 1981).
- "The Spatial Effects of a Tax on Housing and Land," Regional Science and Urban Economics, (November 1981).
- "Comments on Weicher," The Journal of Law and Economics, (December 1981).
- Comment, in Sherwin Rosen ed. Studies in Labor Markets, University of Chicago Press, (1981).
- "Planning and Market Structure," in The Economics of Information and Uncertainty, edited by J.J. McCall, University of Chicago Press, (1982).
- "The Disruptive Effect of Inflation on the Organization of Markets," in Robert Hall, ed. The Economics of Inflation, University of Chicago Press, (1982).
- "The Need for Coordination Among Firms With Special Reference to Network Industries," (with J. M. Klammer) University of Chicago Law Review, (Spring 1983).
- "A Reexamination of Delivered Pricing," The Journal of Law and Economics, (April 1983).
- "Futures Trading, Market Interrelationships, and Industry Structure," American Journal of Agricultural Economics, (May 1983).
- "The Regulation of Insider Trading," (with D. Fischel), Stanford Law Review, (May 1983), reprinted in J. Macey ed., Classics in Corporate Law and Economics, Edward Elgar Publishing (2008), reprinted in part in Roberto Romano, Foundations of Corporate Law, Oxford University Press (1993), and Corporate Law Series – Insider Trading, Edward Elgar Publishing (2012).
- "The Location and Employment Choices of New Firms: An Econometric Model with Discrete and Continuous Endogenous Variables," The Review of Economics and Statistics, (August 1983).
- "Economic Goals and Remedies of the AT&T Modified Final Judgment," (with W. Lavey), Georgetown Law Review, (August 1983).
- "Equilibrium Fluctuations When Price and Delivery Lags Clear the Market," Bell Journal of Economics, (Autumn 1983).
- "Energy and Location," Energy Costs, Urban Development, and Housing, Brookings Institution, (1984).
- "Futures Markets: Their Purpose, Their History, Their Growth, Their Successes and Failures," Journal of Futures Markets, (September 1984). (Reprinted in Futures Markets edited by A.G. Malliaris and W.F. Mullady, Edward Elgar Publishing Limited, 1995; and in Classic Futures: Lessons from the Past for the Electronics Age, edited by Lester Telser, Risk Books, 2000.)

- "The Economics of Gray-Market Imports," (with C. DeMuth), written for the Coalition to Preserve the Integrity of American Trademarks (COPIAT), (May 1985).
- "The Limitation of Pigouvian Taxes As A Long Run Remedy for Externalities: Extension of Results," (with G. Loury) Quarterly Journal of Economics, (August 1986).
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- "The Theory and The Facts of How Markets Clear: Is Industrial Organization Valuable for Understanding Macroeconomics?" in Handbook of Industrial Organization, eds. Schmalensee and Willig, (1989).
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- "Comments on Vertical Integration and Market Foreclosure," Brookings Papers on Economic Activity: Microeconomics, (1990).
- Book Review of Tirole's "The Theory of Industrial Organization", Journal of Political Economy, (June 1990).
- "The Genesis of Inflation and the Costs of Disinflation: Comment," Journal of Money, Credit & Banking, (August 1991, Part 2).
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- "The Economics of Cooperation and Competition in Electronic Services Network Industries," in Economics of Electronic Service Networks, Wildman Steven ed., Praeger Press, (1992).
- "Merger Policy and Market Definition Under the EC Merger Regulation," (with W. D. Bishop). Conference on Antitrust in a Global Economy, Fordham Corporate Law Institute, (1994).
- "The Antitrust Economics of Credit Card Networks," (with A. Frankel) Antitrust Law Journal, (Winter 1995).
- "Economic Organization and Conflict," Journal of Institutional and Theoretical Economics, (March 1995).
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- "Antitrust Policy Toward Mergers When Firms Innovate: Should Antitrust Recognize the Doctrine of Innovation Markets?" Testimony before the Federal Trade Commission Hearings on Global and Innovation-based Competition (October 1995).

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- Interview, Economists' Roundtable, Antitrust Magazine, (Spring 2003).
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- "Why Barriers to Entry are Barriers to Understanding," American Economic Review, (May 2004).
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- "Econometric Analysis of Telephone Mergers," (with H. Sider) pp. 373-395 in American Bar Association, Econometrics: Legal, Practical, and Technical Issues, (2005).
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- "Transaction Costs, Externalities and "Two-Sided" Payment Markets," (with A. Frankel), Columbia Business Law Review, No. 3 (2005).
- "Predation and the Entry and Exit of Low-Fare Carriers," (with G. Bamberger), in Advances in Airline Economics: Competition Policy and Antitrust, Darin Lee, ed., (2006).
- "Why Tie An Essential Good," (with Michael Waldman), in Hahn R. ed., Antitrust Policy and Vertical Restraints, AEI-Brookings, (July 2006).
- "Market Definition: Use and Abuse," Competition Policy International (Spring 2007)

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Separate Statement of Dennis W. Carlton, in The Report of the Antitrust Modernization Commission, (April 2007)

"Does Antitrust Need to be Modernized?," Journal of Economic Perspectives (Summer 2007)

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"Product Variety and Demand Uncertainty: Why Mark-ups Vary with Quality," (with James D. Dana Jr.), Journal of Industrial Economics (2008)

"Regulation, Antitrust, and Trinko," (With H. Sider), in eds. J. Kwoka and L. White, The Antitrust Revolution, (2008).

"A Solution to Airport Delays," (with W. Whalen, K. Heyer and O. Richard), Regulation (2008).

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"Safe Harbors for Quantity Discounts and Bundling," (with M. Waldman), George Mason Law Review (2008).

"Appropriate Antitrust Policy Towards Single-Firm Conduct: Extraction vs. Extension" (with K. Heyer), Antitrust, (condensed version of subsequent paper), (Summer 2008).

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"Assessing the Anticompetitive Effects of Multiproduct Pricing," (with P. Greenlee and M. Waldman), Antitrust Bulletin, (Fall, 2008).

"The Need to Measure the Effect of Merger Policy and How to Do It," Antitrust, (condensed version of subsequent paper), (Summer 2008).

"How to Measure The Effectiveness of US Merger Policy," <http://voxeu.org/index.php?q=node/3344>, (2009), and a slightly revised version appears as "Measuring the Effectiveness of US Merger Policy" in The Economists' Voice: Vol. 6: Iss. 7, Article 2, (2009). These are condensed versions of the subsequent paper.

"Why We Need to Measure the Effect of Merger Policy and How to Do It," Competition Policy International (Spring 2009).

"Competition, Monopoly, and Aftermarkets," (with M. Waldman), Journal of Law, Economics and Organization, (April 2009).

"Competition Policy: Beware of Using It to Harm Competition," Fair Trade, Japan, (Spring 2009).

"Should Competition Policy Prohibit Price Discrimination?" (with M. Israel), Global Competition Review, (2009).

"Merger Guidelines Revisited?" an interview, Antitrust, American Bar Association, (Fall 2009).

"How Should Economic Evidence be Presented and Evaluated," proceedings of the EU Competition Workshop, Florence, Italy, (June 2009).

"Externalities in Payment Card Networks: Theory and Evidence: A Commentary," The Changing Retail Payments Landscape: What Role for Central Banks?, Federal Reserve Bank of Kansas City (2010).

"Why Tie a Product Consumers Do Not Use?," (with J. Gans and M. Waldman), Recipient of Inaugural Robert F. Lanzilotti Prize, awarded by the International Industrial Organization Society for Best Paper in Antitrust Economics, (2008), American Economic Journal: Microeconomics (2010).

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"Revising the Horizontal Merger Guidelines," Journal of Competition Law & Economics (2010), also appears in Journal of Competition Law – CADE (Brazil) Vol. 1, No. 23 (2011), also appears in Revista de Direito da Concorrência, Conselho Administrativo de Defesa Econômica, (Brazilian Government Publication), translated into Portuguese by T. Aranovich, p. 83-114 (2011).

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"Will The New Guidelines Clarify or Obscure Antitrust Policy?," (with M. Israel), The Antitrust Source, (2010).

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- "Buyer Power in Merger Review," (with M. Coleman and M. Israel), Oxford Handbook of International Antitrust Economics, eds. R. Blair and D. Sokol (2015).
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- "Roundtable with Economists: Discussing Practice and Theory with the Experts", Antitrust Magazine, Vol. 32, No. 2, (Spring 2018).
- "Vertical Most-Favored-Nation Restraints and Credit Card No-Surcharge Rules," (with R. Winter), The Journal of Law and Economics, (2018), Best Academic Economics Article in Antitrust - 2019 Antitrust Writing Awards, given by Concurrences and George Washington University Law School.
- "Are Legacy Airline Mergers Pro- or Anti-Competitive? Evidence from Recent U.S. Airline Mergers," (with M. Israel, I. MacSwain and E. Orlov), International Journal of Industrial Organization, (2019).
- "The Anticompetitive Effects of Vertical Most-Favored-Nation Restraints and the Error of Amex," Columbia Business Law Review, (2019).
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- "A Retrospective Analysis of the AT&T/Time Warner Merger," (with G. Giosov, M. Israel, and A. Shampine), The Journal of Law and Economics, (November 2022).
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EXPERT TESTIMONIAL EXPERIENCE (Includes last 4 years)

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- Expert Rebuttal Reports, Deposition and Testimony of Dennis W. Carlton in Re: SourceOne Dental, Inc., v. Patterson Company, Inc. Henry Schein, Inc. and Benco Dental Supply Company, in the United States District Court for the Eastern District of New York, Case No. 15-cv-05440, (Expert Rebuttal Report), April 28, 2017, in Re: Dental Supplies Antitrust Litigation, in the United States District Court for the Eastern District of New York, Case No. 1:16-CV-00696-BMC-GRB, November 20, 2017, (Expert Rebuttal Report), January 11, 2018 (Deposition); In the matter of Benco Dental Supply Co., Henry Schein, Inc., Patterson Companies, Inc., before the United States of America Federal Trade Commission, FTC Docket No. 9379, September 5, 2018 (Expert Report), October 5, 2018 (Deposition), February 14, 2019 (Testimony).
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- Expert Report, Depositions, Declaration, Rebuttal Report and Testimony of Dennis W. Carlton in Re: Valassis Communications, Inc., v. News Corporation, et al, in the United States District Court Southern District of New York, Case No. 1:17-cv-07378-PKC, November 3, 2017 (Expert Report), February 13, 2018 (Deposition), May 31, 2019 (Declaration), July 9, 2019 (Deposition), July 17, 2020 (Rebuttal Report), July 13, 2021 (Testimony).
- Declarations, Expert Reports and Deposition of Dennis W. Carlton in Re: Daniel Gordon, et al. v. Amadeus IT Group, S.A., et al., in the United States District Court Southern District of New York, Civ. A. No. 1:15-cv-05457 (KPF), November 17, 2017 (Declaration), February 27, 2018 (Expert Report), July 17, 2018 (Deposition), July 18, 2018 (Declaration), December 13, 2018 (Expert Merits Report), February 6, 2019 (Deposition).
- Expert Reports, Deposition and Testimony of Dennis W. Carlton in Re: United States of America v. AT&T Inc., DIRECTV Group Holdings, LLC, and Time Warner, Inc., in the United States District Court for the District of Columbia, Case No.1:17-cv-02511-RJL, February 2, 2018 (Expert Report), February 26, 2018 (Rebuttal Expert Report), March 9, 2018 (Deposition), April 12, 2018 (Testimony).

- Expert Report and Deposition of Dennis Carlton in Re: Arista Networks, Inc., v. Cisco Systems, Inc., in the United States District Court for the Northern District of California, Case No. 5:16-cv-00923 (BLF), February 2, 2018 (Expert Report), February 16, 2018 (Deposition).
- Expert Report and Deposition of Dennis W. Carlton in Re: U.S. Futures Exchange, L.L.C., and U.S. Exchange Holdings, Inc., v. Board of Trade of the City of Chicago, Inc., and Chicago Mercantile Exchange, Inc., in the United States District Court Northern District of Illinois Eastern Division, Civil No. 1:04-CV-6756, February 5, 2018 (Expert Report), February 23, 2018 (Deposition).
- Expert Report and Deposition of Dennis W. Carlton in Re: Oxbow Carbon & Minerals LLC, et al., v. Union Pacific Railroad Company, et al., in the United States District Court for the District of Columbia, Case No. 1:11-cv-01049, September 20, 2018 (Expert Report), October 17, 2018 (Deposition).
- Expert Report, Expert Reply Report and Deposition of Dennis W. Carlton in Re: Barry's Cut Rate Stores Inc.; DDMB, Inc. d/b/a Emporium Arcade Bar; et al v. Visa, Inc.; Mastercard Incorporated; et al., in the United States District Court for the Eastern District of New York, MDL No. 1720, Docket No. 5-md-01720-MKB-JO, October 4, 2018 (Expert Report), October 11, 2019 (Expert Reply Report), December 10, 2019 (Deposition).
- Affidavit of Dennis W. Carlton in Re: United States of America v. Akshay Aiyer, in the United States District Court Southern District of New York, Case No. 18 Cr. 333 (JGK), March 22, 2019.
- Expert Report and Deposition of Dennis W. Carlton in Re: Packaged Seafood Products Antitrust Litigation, in the United States District Court for the Southern District of California, Case No. 15-MD-2670 JLS (MDD), May 10, 2019 (Expert Report), June 4, 2019 (Deposition).
- Expert Report of Dennis W. Carlton in Re: In the Matter of an Independent Review Process before the International Centre for Dispute Resolution Afiliat Domains No. 3 Limited, v. Internet Corporation for Assigned Names and Numbers, ICDR Case No. 01-18-0004-2702, May 30, 2019.
- Expert Report, Expert Rebuttal Report and Deposition of Dennis W. Carlton in Re: In the Matter of the Arbitration between Spencer Meyer, v. Uber Technologies, Inc.; and Travis Kalanick, The Arbitration Tribunals of the American Arbitration Association, AAA No. 01-18-0002-1956, August 15, 2019 (Expert Report), September 16, 2019 (Expert Rebuttal Report), September 26, 2019 (Deposition).
- Expert Report, Deposition, Expert Reply Report and Declaration of Dennis W. Carlton in Re: Andrew Mackmin; et al v. Visa Inc., Visa U.S.A. Inc., Visa International Service Association, and Plus System, Inc.; et al, in the United States District Court for the District of Columbia, C.A. No.: 11-cv-1831, September 19, 2019 (Expert Report), January 23, 2020 (Deposition), September 3, 2020 (Expert Reply Report), February 25, 2022 (Declaration).
- Expert Report, Expert Rebuttal, Deposition and Expert Supplemental Report of Dennis W. Carlton in Re: Domestic Airline Travel Antitrust Litigation, in the United States District Court of Columbia, Class Action, MDL No. 2656, Misc. N. 15-1404 (CKK), September 29, 2019 (Expert Report), November 14, 2019 (Expert Rebuttal Report), November 17, 2020 (Deposition), March 10, 2021 (Expert Supplemental Report).
- Expert Rebuttal Report and Deposition of Dennis W. Carlton in Re: Interior Molded Doors Antitrust Litigation, in the United States District Court for the Eastern District of Virginia Richmond Division, Lead Civil Action No. 3:18-cv-00718-JAG, March 10, 2020 (Expert Rebuttal Report), May 28, 2020 (Deposition).

- Expert Report and Deposition of Dennis W. Carlton in Re: Insignia Systems, Inc., v. News Corporation; News America Marketing FSI L.L.C. et al., in the United States District Court District of Minnesota, Case No.: 19-cv-1820, May 10, 2021 (Expert Report), June 28, 2021 (Deposition).
- Expert Rebuttal Report, Deposition and Testimony of Dennis W. Carlton in Re: Illumina, Inc. and Grail, Inc., in the United States of America, Before the Federal Trade Commission Office of Administrative Law Judges, Docket No. 9401, July 16, 2021 (Expert Rebuttal Report), August 3, 2021 (Deposition), October 1, 2021 (Testimony).
- Expert Report, Reply Report and Testimony of Dennis W. Carlton in Re: Namecheap, Inc. v. Internet Corporation for Assigned Names and Numbers (ICANN), in the matter of an independent review process before the International Centre for Dispute Resolution, ICDR Case No. 01-20-0000-6787, January 14, 2022 (Expert Report), March 14, 2022 (Reply Report), April 1, 2022 (Testimony).
- Expert Report and Deposition of Dennis W. Carlton in Re: Broiler Chicken Antitrust Litigation, in the United States District Court for the Northern District of Illinois, Case No.: 1:16-cv-08637, February 21, 2022 (Expert Report), June 9, 2022 (Deposition).
- Expert Report, Deposition, Declaration and Testimony of Dennis W. Carlton in Re: United States of America, et al., v. American Airlines Group Inc. and JetBlue Airways Corporation, in the United States District Court for the District of Massachusetts, Civil Action No. 1:21-cv-11558-LTS, July 11, 2022 (Expert Report), August 23, 2022 (Deposition), September 2, 2022 (Declaration), October 26, 2022 (Testimony).
- Expert Report, Deposition and Testimony of Dennis W. Carlton in Re: Federal Trade Commission v. Meta Platforms, Inc. and Within Unlimited, Inc., in the United States District Court Northern District of California San Jose Division, Case No. 3:22-cv-04325, November 11, 2022 (Expert Report), Case No. 5:22-cv-04325-EJD, December 1, 2022 (Deposition), December 20, 2022 (Testimony).
- Expert Report of Dennis W. Carlton and Summary of Empirical Analyses Supporting Carlton Opinions in Re: United States of America v. Mahesh Patel, Robert Harvey, Harpreet Wasan, Steven Houghtaling, Tom Edwards, and Gary Prus, in the United States District Court District of Connecticut, Case No. 3:21-cv-220 (VAB), (Expert Report), February 2, 2023, (Summary of Empirical Analyses), March 14, 2023.
- Expert Rebuttal Report of Dennis W. Carlton in Re: In the Matter of Microsoft Corp., a corporation and Activision Blizzard, Inc., a corporation, in the United States of America Federal Trade Commission Office of Administrative Law Judges, FTC Docket No. 9412, May 25, 2023.
- Expert Report of Dennis W. Carlton in Re: IQVIA Inc. and IMS Software Service, Ltd., v. Veeva Systems, Inc., in the United States District Court District of New Jersey, Case No. 2:19-cv-00177-JXN-JSA, June 15, 2023.
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